In the Claims

1. (Previously presented) A method for validating a flow calibration factor of a flow meter, comprising the steps of:

determining an initial flexural stiffness of a component of said flow meter;

determining a current flexural stiffness of said component from a flow meter vibrational displacement produced in response to application of a predetermined force to one or more flow tubes of the flow meter;

comparing said initial flexural stiffness to said current flexural stiffness; and

detecting a calibration error condition responsive to comparing said initial flexural stiffness to said current flexural stiffness.

2. (Original) The method of claim 1 further comprising the step of:

signaling said calibration error condition.

3. (Original) The method of claim 1or 2 further comprising the step of:

correcting said flow calibration factor responsive to said calibration error condition being detected.

4. (**Currently amended**) The method of claim 1 wherein said **current** flexural stiffness[**es**] [**are**] **is** determined by solving a single degree of freedom model.

5. (**Currently amended**) The method of claim 4 wherein said single degree of freedom model is solved using a method comprising the steps of:

applying a known force to said flow meter component;

measuring a resultant deflection of said flow meter component; and

determining said **current** flexural stiffness[**es**] responsive to said force and deflection.

6. (**Currently amended**) The method of claim 4 wherein said single degree of freedom model is solved using a method comprising the steps of:

determining a receptance transfer function;

calculating an inverse receptance frequency response; and

determining said **<u>current</u>** flexural stiffness**[es]** responsive to said frequency response.

7. (**Currently amended**) The method of claim 4 wherein said single degree of freedom model is solved using a method comprising the steps of:

[identifying constants;]

applying a transfer function **[model]** to a complex frequency response;

converting said transfer function from a mobility form to a response form;

extracting modal parameters from said transfer function; and

calculating **<u>said current</u>** flexural stiffness**[es]** responsive to said modal parameters.

8. (**Currently amended**) The method of claims 6 or 7 wherein said transfer function is determined using a multi-sine excitation method, comprising the steps of:

[determining measurement frequencies of interest;]

defining a multi-sine excitation signal;

[performing a crest factor minimization;]

[defining a total measurement time;]

[defining a total number of averages;]

applying said multi-sine to **[the]** **<u>an</u>** input of said flow meter component;

measuring a resultant output responsive to said multi-sine input; and

determining said transfer function responsive to said multi-sine input and said resultant output.

9. (**Currently amended**) The method of claim 1 wherein said **<u>current</u>** flexural stiffness**[es]** **[are]** **<u>is</u>** determined by solving a multiple degree of freedom model.

10. (**Currently amended**) The method of claim 9 wherein said method of solving a multiple degree of freedom model comprises the steps of:

generating a response model of said flow meter structure;

converting said response model to a modal model;

converting said modal model into a spatial model; and

determining said **current** flexural stiffness from said spatial model.

11. (Original) The method of claim 9 wherein said calibration error is corrected using coefficient estimation techniques.

12. (Original) The method of claim 9 wherein said calibration error is corrected using multi-fluid calibration techniques.

13. (Original) The method of claim 9 wherein said calibration error is corrected using trending techniques.

14. (Original) The method of claim 10 wherein said step of generating a response model further comprising the step of normalizing model data.

15. (Original) The method of claim 14 wherein said normalizing step comprises the steps of:

normalizing said model data with respect to a resonant frequency;

normalizing said model data with respect to a reference temperature; and

normalizing said model data with respect to a response variable.

16. (Original) The method of claim 15 wherein said response variable is displacement.

17. (Previously presented) A system for validating a flow calibration factor of a flow meter comprising:

means for determining an initial flexural stiffness of a component of said flow meter;

means for determining a current flexural stiffness of said component from a flow meter vibrational displacement produced in response to application of a predetermined

force to one or more flow tubes of the flow meter;

means for comparing said initial flexural stiffness to said current flexural stiffness; and

means for detecting a calibration error condition responsive to comparing said initial flexural stiffness to said current flexural stiffness.

18. (Original) The system of claim 17 wherein said system further comprises a means for signaling said calibration error condition.

19. (Original) The system of claims 17 or 18 wherein said system further comprises a means for correcting said flow calibration factor error condition.

20. (**Currently amended**) The system of claim 17 wherein said means for determining said **current** flexural stiffness[**es**] comprises a means for solving a single degree of freedom model.

21. (**Currently amended**) The system of claim 20 wherein said means for solving said single degree of freedom model comprises:

means for applying a known force to said flow meter component;

means for measuring a resultant deflection of said flow meter component; and

means for determining said **current** flexural stiffness[**es**] responsive to said force and deflection.

22. (**Currently amended**) The system of claim 20 wherein said means for solving said single degree of freedom model comprises:

means for determining a receptance transfer function;

means for calculating an inverse receptance frequency response; and

means for determining said **current** flexural stiffness[**es**] responsive to said frequency response.

23. (**Currently amended**) The system of claim 20 wherein said means for solving said

single degree of freedom model comprises:

[means for identifying constants;]

means for applying a transfer function **[model]** to a complex frequency response;

means for converting said transfer function from a mobility form to a response form;

means for extracting modal parameters from said transfer function; and

means for calculating **<u>said current</u>** flexural stiffness**[es]** responsive to said modal parameters.

24. **(Currently amended)** The system of claims 22 or 23 wherein said transfer function is determined using a multi-sine excitation means, said multi-sine excitation means comprising:

[means for determining measurement frequencies of interest;]

means for defining a multi-sine excitation signal;

[means for performing a crest factor minimization;]

[means for defining a total measurement time;]

[means for defining a total number of averages;]

means for applying said multi-sine to **[the]** **<u>an</u>** input of said flow meter component;

means for measuring a resultant output responsive to said multi-sine input; and

means for determining said transfer function responsive to said multi-sine input and said resultant output.

25. **(Currently amended)** The system of claim 17 wherein said means for determining said **<u>current</u>** flexural stiffness**[es]** comprises a means for solving a multiple degree of freedom model.

26. **(Currently amended)** The system of claim 25 wherein said means for solving a multiple degree of freedom model comprises:

means for generating a response model of said flow meter structure;

means for converting said response model to a modal model;

means for converting said modal model into a spatial model; and

means for determining said **current** flexural stiffness from said spatial model.

27. (Original) The system of claim 19 wherein said means for correcting said flow calibration error corrects using coefficient estimation techniques.

28. (Original) The system of claim 19 wherein said means for correcting said flow calibration error corrects using multi-fluid calibration techniques.

29. (Original) The system of claim 19 wherein said means for correcting said flow calibration error corrects using trending techniques.

30. (Previously presented) The system of claim 26 wherein said means for of generating a response model further comprises a means for normalizing model data.

31. (Original) The system of claim 30 wherein means for normalizing model data further comprises:

means for normalizing said model data with respect to a resonant frequency;

means for normalizing said model data with respect to a reference temperature; and

means for normalizing said model data with respect to a response variable.

32. (Original) The system of claim 31 wherein said response variable is displacement.

33. (Original) The system of claim 31 wherein said response variable is acceleration.